ABSTRACT

The invention relates to a device and a method for producing, from any previously configured ion beams, precisely localized small packages of ions which all fly at the same velocity. The invention consists of damping the ions in a damping-gas filled series of apertured diaphragms (which are firstly subjected alternately to the two phases of an RF voltage and secondly to a multiphase low-frequency travelling field voltage) into the axis of the apertured diaphragm arrangement and packaging the ions in bundles which are propelled axially at the same velocity for ions of different specific masses. These ion packages, which are restricted both in an axial and a radial direction, can be used to advantage for injection into different types of mass spectrometer, both storage ion-trap mass spectrometers, such as cyclotron resonance mass spectrometers or quadrupole ion traps and, especially, for time-of-flight mass spectrometers with orthogonal injection. The arrangement of a damping-gas filled series of apertured diaphragms can also be used for ion fragmentation.